Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims

1-45. (Canceled)

46. (Previously Presented) A recognition system comprising:

at least one immobilized capture sequence that is synthetic and does not bind to naturally occurring nucleic acids; and

at least one complementary recognition sequence that binds to the capture sequence and contains at least one binding site for a substrate S, wherein the recognition sequence is synthetic and does not bind to naturally occurring nucleic acids, wherein the binding of the recognition sequence to the capture sequence forms a non-covalent, hydrogen-bonded molecular pairing system.

47. (Previously Presented) The recognition sequence of claim 46, wherein the capture and/or recognition sequences are selected from the group consisting of pyranosyl nucleic acid (p-NA) and nucleic acid having one or more aminocyclohexylethanoic acid (CNA) units.

48. (Previously Presented) The recognition sequence of claim 47, wherein the p-NA is a pyranosyl RNA (p-RNA).

49. (Previously Presented) The recognition sequence of claim 46, wherein the binding site is a biomolecule that binds substrate S.

50. (Previously Presented) The recognition sequence of claim 49, wherein the biomolecule is selected from peptides, peptoids, proteins, lipids, glycoproteins, filament constituents, viruses, viroids, antibodies, antibody fragments, saccharides, and nucleic acids, and their active moieties.

51. (Previously Presented) The recognition system according to claim 47, wherein the p-NA is selected from the group consisting of ribopyranosyladenosine, ribopyranosylguanosine, ribopyranosylthymidine, ribopyranosylcytosine, ribopyranosyltryptamine or ribopyranosyl-N-phthalotryptamine, ribopyranosyluracil, and their 2-amino-4-(carboxymethyl)ribopyranosyl derivatives.

52. (Previously Presented) The recognition system according to claim 46, wherein the capture sequence is immobilized on a carrier.

53. (Previously Presented) The recognition system according to claim 52, wherein the capture sequence is immobilized at defined sites of the carrier.

54. (Previously Presented) The recognition system according to claim 52, wherein the capture sequence is immobilized on a carrier electrode of the carrier.

55. (Previously Presented) The recognition system according to claim 46, wherein the immobilized capture sequence contains various binding sites for the complementary recognition sequence, by means of which various complementary recognition sequences binds to the capture sequence.

56. (Previously Presented) The recognition system according to claim 55, wherein at least one further complementary recognition sequence is bound to the capture sequence, wherein the binding site of at least one further complementary recognition sequence is an additional biomolecule that binds the substrate S.

57. (Previously Presented) A process for identifying a substrate S in a sample, the process comprising:

(a) providing a recognition system comprising:

at least one immobilized capture sequence that is synthetic and does not bind to naturally occurring nucleic acids; and

at least one complementary recognition sequence that binds to the capture sequence and contains at least one binding site for a substrate S, wherein the recognition sequence is synthetic and does not bind to naturally occurring nucleic acids, wherein the binding of the recognition sequence to the capture sequence forms a non-covalent, hydrogen-bonded molecular pairing system.

(b) contacting the recognition sequence containing at least one binding site for substrate S with a sample containing substrate S;

(c) simultaneously or successively contacting the recognition sequence and sample with the immobilized capture sequence to form an immobilized complex; and

(d) detecting a complex of immobilized capture sequence, recognition sequence, and substrate S.

58. (Previously Presented) The process according to claim 57, wherein the formation of the complex is controlled by means of physical parameters.

59. (Previously Presented) The process according to claim 58, wherein the physical parameters are selected from the group consisting of temperature, salts, solvents, and electrophoretic processes.

60. (Previously Presented) The process according to claim 57, wherein the complex is detected by means of a label on the complex or by directly detecting the complex itself.

61. (Previously Presented) The process according to claim 60, wherein the complex is detected by means of radioactive labeling, fluorescent labeling, enzymatic labeling, redox labeling, spin labeling of the recognition sequence, redox processes in an environment or on an electrode, impedance measurement, or direct current measurement.

62. (Previously Presented) The process according to claim 57, further comprising isolating the complex of the recognition sequence and substrate S.

63. (Previously Presented) The process according to claim 57, wherein the complex of the recognition sequence and substrate S is in a binding equilibrium, and further comprising isolating the complex after freezing the binding equilibrium.

64. (Previously Presented) The process according to claim 62, further comprising the step of covalently cross-linking the recognition sequence and substrate S.